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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/417,832	10/14/1999	TOMONARI HORIKIRI	35.C13929	8008

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EXAMINER	
RUTHKOSKY, MARK	

ART UNIT	PAPER NUMBER
1745	23

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS.23

Office Action Summary	Applicati n N .	Applicant(s)	
	09/417,832	HORIKIRI ET AL.	
	Examiner	Art Unit	
	Mark Ruthkosky	1745	

-- The MAILING DATE of this communication appears n the cover she t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,6,7,9 and 10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6,7,9 and 10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Summary

Claims 1, 6-7 and 9-10 are pending.

Specification

The objection under 35 U.S.C. 132 to the amendment filed 11/20/2000 because it introduces new matter into the disclosure has been overcome by the applicant's amendment canceling the new matter.

The amendment filed 3/19/2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

The applicant's amendments to pages 15 and 36 of the specification are improper and introduce new matter to the specification. Compound 18 is not shown as a reference compound in the original specification. It is shown as a compound used to form a gel electrolyte. In addition, the inclusion of the newly added phrase, "can be used, but it requires a stabilizer to be chemically stable" is new matter. The amendments should be removed from the specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The rejection of claims 1, 4, 5, 6 and 8-9 under 35 U.S.C. 102(b) as being anticipated by Williams et al. (US 5,470,677) has been overcome by the applicant's amendment.

The rejection of claims 1, 4, 5, 6 and 8-9 under 35 U.S.C. 102(b) as being anticipated by Kaitoh et al. (US 4,996,334) has been overcome by the applicant's amendment.

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The rejection of claim 5 under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (US 5,470,677) as applied to claims 1, 3-4 and 6 above, and further in view of GB (2,212,504) has been overcome by the applicant's amendment.

The rejection of claims 2 and 7 under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (US 5,470,667) in view of Green et al. (WO 98/11619) has been overcome by the applicant's amendment.

The rejection of claims 2 and 6 under 35 U.S.C. 103(a) as being unpatentable over Makoto Ue (Electrochemica Acta), in view of Green et al. (WO 98/11619) has been overcome by the applicant's amendment.

New Rejections

Claim 10 is rejected under 35 U.S.C. 103(a) as being obvious over Williams et al. (US 5,470,677) in view of Green et al. (WO 98/11619.)

Williams et al. (US 5,470,667) teaches a cell comprising a gel electrolyte for a battery that includes an organic solvent, an electrolyte salt and a gelling agent such as sorbitols including DBS (which are polyhydroxy compounds, see col. 1, line 65- col. 2, line 49.) The gelling agent inherently gels by forming a fibrous associated body by intermolecular bonding. Battery components are included throughout the reference. Williams et al. (US 5,470,667) does not teach a gel electrolyte that includes an ionically conductive material that is liquid at working temperature. In Williams, the electrolyte is a salt dissolved in an organic solution.

Green et al. (WO 98/11619) teaches an electrolyte, which comprises a composite of a polymer and a molten salt, immobilized within the polymer. The molten salts may be

pyridinium or imidazolium salts (see page 2, lines 1-10.) Polymers include polyethylene oxide, polyacrylonitrile and PVDF amongst others (see page 2, lines 10-21.) These polymers are gelling agents that are capable of forming a polymer-associated body by coordination bonding or hydrogen bonding. Functional groups, such as carbonyls, are noted in these materials. These materials are also noted in the instant specification for the same use as the instant invention (page 2). The electrolyte is used in electrochemical cells and electrochromic windows (see abstract, page 3.)

It would be obvious to one of ordinary skill in the art at the time the invention was made to include a liquid salt as an ionically conductive material in Williams as the materials will provide improved ionic conductivity and improved operation at high temperatures as taught by Green. Green et al. (WO 98/11619) shows molten salts such as pyridinium or imidazolium in polymer gel electrolytes that are provided to transfer charge. One of ordinary skill in the art may substitute these liquid salts in Williams to provide improved ionic conductivity and operation at high temperatures.

Claims 1, 6, 7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anson et al. (US 5,008,339) in view of Green et al. (WO 98/11619.)

Anson et al. (US 5,008,339) teaches an electrolyte, which includes membranes prepared from quaterinized amino compounds that swell to provide increased ion transport (col. 1, lines 15-25; col. 2, lines 10-20; claims 1-6.) Gelling agents include structures of alkyl ammonium groups in column 3. The material self organizes to a stable the material (col. 3, lines 60-end), which is attributed to an association between the polymeric chains in the electrolyte mixture (col.

11, lines 50-end.) The electrolyte includes a salt for ionic transport in an electrochemical assembly (see Example II.) The reference teaches a structure similar to that of example 20. In the reference, three of the substituents may be aliphatic groups while one is an alkylene group. The structure will provide an equivalent charge for intermolecular forces as the structure in the claim. The reference does not teach the electrolyte salt to be liquid at working temperature. The salt is dissolved into a liquid.

Green et al. (WO 98/11619) teaches an electrolyte that comprises a composite of a polymer and a molten salt immobilized within the polymer. The molten salts may be pyridinium or imidazolium salts (see page 2, lines 1-10.) Polymers include polyethylene oxide, polyacrylonitrile and PVDF amongst others (see page 2, lines 10-21.) These polymers are gelling agents, which are capable of forming a polymer-associated body by coordination bonding or hydrogen bonding. Functional groups, such as carbonyls, are noted in these materials. These materials are also noted in the instant specification for the same use as the instant invention (page 2). The electrolyte is used in electrochemical cells and electrochromic windows (see abstract, page 3.)

It would be obvious to one of ordinary skill in the art at the time the invention was made to include a liquid salt as an ionically conductive material in Anson et al. (US 5,008,339) as the materials will provide improved ionic conductivity and improved operation at high temperatures as taught by Green. Green et al. (WO 98/11619) shows molten salts such as pyridinium or imidazolium in polymer gel electrolytes, which are provided to transfer charge. One of ordinary skill in the art may substitute these liquid salts in Anson et al. (US 5,008,339) to provide improved ionic conductivity and operation at high temperatures. Further, it would be obvious to

one of ordinary skill in the art at the time the invention was made to use the combination of a gel electrolyte with a liquid salt as an electrolyte in electrochromic windows as Green teaches gel electrolytes are used in electrochromic windows. The electrolyte of Anson et al. (US 5,008,339) will provide the same function of transferring charge.

Claims 1, 6, 7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (US 5,470,677) in view of Terech et al. (Chem. Rev. 1997, 97, 3133-3159) and further in view of Green et al. (WO 98/11619.)

Williams et al. (US 5,470,667) teaches a cell comprising a gel electrolyte for a battery that includes an organic solvent, an electrolyte salt and a gelling agent such as sorbitols including DBS (which are polyhydroxy compounds, see col. 1, line 65- col. 2, line 49.) The gelling agent inherently gels by forming a fibrous associated body by intermolecular bonding. Battery components are included throughout the reference. Williams et al. (US 5,470,667) does not teach a gel electrolyte that includes an ionically conductive material that is liquid at working temperature. In Williams, the electrolyte is a salt dissolved in an organic solution.

Terech et al. (Chem. Rev. 1997, 97, 3133-3159) teaches an overview of organo-gel materials including DBS. DBS is taught to be useful as gel electrolyte solutions for lithium battery applications in the instant specification, Terech (p. 3157) and Williams. It would be obvious to one of ordinary skill in the art at the time the invention was made to substitute the various organo-gel materials taught by Terech et al. (Chem. Rev. 1997, 97, 3133-3159) for the DBS material in Williams as one of ordinary skill in the art would understand that the materials will provide a gel electrolyte for incorporating electrolyte salts to be useful for transferring ions

in gel electrolyte solutions. The references do not teach an ionically conducting material that is a salt that is liquid at working temperatures as an electrolyte in the batteries.

Green et al. (WO 98/11619) teaches an electrolyte that comprises a composite of a polymer and a molten salt immobilized within the polymer gel. The molten salts may be pyridinium or imidazolium salts (see page 2, lines 1-10.) Polymers include polyethylene oxide, polyacrylonitrile and PVDF amongst others (see page 2, lines 10-21.) These polymers are gelling agents that are capable of forming a polymer-associated body by coordination bonding or hydrogen bonding. These materials are also noted in the instant specification for the same use as the instant invention (page 2). The electrolyte is used in electrochemical cells and electrochromic windows (see abstract, page 3.)

It would be obvious to one of ordinary skill in the art at the time the invention was made to include a liquid salt as an ionically conductive material in Williams as the materials will provide improved ionic conductivity and improved operation at high temperatures as taught by Green. Green et al. (WO 98/11619) shows molten salts such as pyridinium or imidazolium in polymer gel electrolytes, which are provided to transfer charge. One of ordinary skill in the art may substitute these liquid salts in Williams to provide improved ionic conductivity and operation at high temperatures.

Response to Arguments

Applicant's arguments filed 3/20/2003 have been fully considered but they are moot due to the new rejections applied as based on the amended claims.

The applicant's arguments to the stability use of dibenzylidene sorbitol derivatives as gelling agents in the prior art are not persuasive as the applicant's provide the same gelling agent in the instant invention. Structure 18 on page 15 of the instant specification teaches that DBS derivatives may be used as a gelled electrolyte. Newly added claim 10 claims that the gel electrolyte must be stable. As the DBS material is taught to be used as a gel electrolyte in the instant specification, the material is shown to be stable as a gel electrolyte.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Examiner Correspondence

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 703-305-0587. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:00.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 703-308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Mark Ruthkosky
Patent Examiner
Art Unit 1745

5/27/03